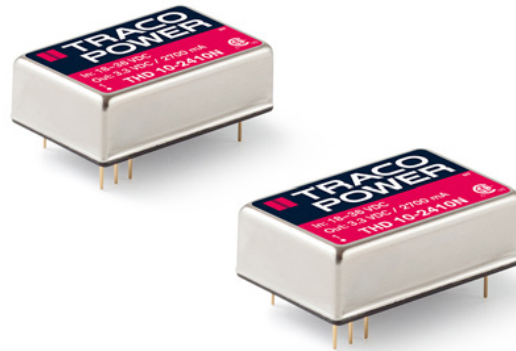


## Features

- ◆ Wide 2:1 input voltage range
- ◆ Internal EMI-filter meets EN 55022, class A without external components
- ◆ High efficiency up to 89%
- ◆ Operating temperature range  
-40°C to +85°C
- ◆ No minimum load required
- ◆ I/O isolation 1'500 VDC
- ◆ Overload protection
- ◆ 3-year product warranty



The THD 10N series is designed for an optimized cost/performance ratio of DC/DC converters with output power of 10 Watt.

They come with an internal EMI-filter to meet EN55022, class A without external components. General features like no minimum load requirement, overload protection and high efficiency make these converters easy to design in. With the popular DIP-24 standard package they are also a drop in replacement for many cost critical applications.

Models				
Order code	Input voltage range	Output voltage	Output current max.	Efficiency typ.
THD 10-1210N	9 – 18 VDC (12 VDC nominal)	3.3 VDC	2700 mA	86 %
THD 10-1211N		5.1 VDC	2000 mA	85 %
THD 10-1212N		12 VDC	833 mA	88 %
THD 10-1213N		15 VDC	666 mA	89 %
THD 10-1222N		±12 VDC	±416 mA	88 %
THD 10-1223N		±15 VDC	±333 mA	89 %
THD 10-2410N	18 – 36 VDC (24 VDC nominal)	3.3 VDC	2700 mA	86 %
THD 10-2411N		5.1 VDC	2000 mA	85 %
THD 10-2412N		12 VDC	833 mA	89 %
THD 10-2413N		15 VDC	666 mA	89 %
THD 10-2422N		±12 VDC	±416 mA	88 %
THD 10-2423N		±15 VDC	±333 mA	89 %
THD 10-4810N	36 – 75 VDC (48 VDC nominal)	3.3 VDC	2700 mA	86 %
THD 10-4811N		5.1 VDC	2000 mA	85 %
THD 10-4812N		12 VDC	833 mA	87 %
THD 10-4813N		15 VDC	666 mA	88 %
THD 10-4822N		±12 VDC	±416 mA	87 %
THD 10-4823N		±15 VDC	±333 mA	88 %

## Input Specifications

Input current at no load	12 Vin models: 20 mA typ. 24 Vin models: 15 mA typ. 48 Vin models: 10 mA typ.
Start-up voltage / under voltage shut down	12 Vin models: 9 VDC / 8.5 VDC (or lower) 24 Vin models: 18 VDC / 17 VDC (or lower) 48 Vin models: 36 VDC / 34 VDC (or lower)
Surge voltage (1 sec. max.)	12 Vin models: 25 V max. 24 Vin models: 50 V max. 48 Vin models: 100 V max.
Conducted noise	EN 55022 class A without external components
EMC immunity	EN 55024
– ESD (electrostatic discharge)	EN 61000-4-2, air $\pm 8$ kV, contact $\pm 6$ kV, perf. criteria A
– Radiated immunity	EN 61000-4-3, 10 V/m, perf. criteria A
– Fast transient / surge	EN 61000-4-4, $\pm 2$ kV, perf. criteria A
– Conducted immunity	EN 61000-4-5, $\pm 1$ kV, perf. criteria A with external capacitor chemi-con KY 220 $\mu$ F, 100 V EN 61000-4-6, 10 Vrms, perf. criteria A

## Output Specifications

Voltage set accuracy	$\pm 2$ % max.
Regulation	– Input variation Vin min. to Vin max. 1.0 % max. – Load variation 0 – 100 % single output models: 1.2 % max. dual output models balanced load: 2.0 % max.
Minimum load	not required
Temperature coefficient	$\pm 0.02$ %/K
Ripple and noise (20 MHz Bandwidth)	100 mVp-p typ.
Transient response (25% load step change)	– Recovery time 300 $\mu$ s typ. – Deviation $\pm 5$ % max.
Short circuit protection	hiccup, automatic recovery
Over load protection	150 % of lout max. typ.
Capacitive load	3.3 & 5.1 VDC models: 1000 $\mu$ F max. 12 VDC models: 470 $\mu$ F max. 15 VDC models: 330 $\mu$ F max. $\pm 12$ VDC models: 220 $\mu$ F max. (each output) $\pm 15$ VDC models: 150 $\mu$ F max. (each output)

## General Specifications

Temperature ranges	– Operating (natural convection 20 LFM) $-40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$ – Case temperature $+105^{\circ}\text{C}$ max. – Storage $-50^{\circ}\text{C}$ to $+125^{\circ}\text{C}$
Derating	2.9 %/K above $+70^{\circ}\text{C}$
Humidity (non condensing)	95 % rel H max.
Reliability, calculated MTBF (MIL-HDBK-217F, at $+25^{\circ}\text{C}$ , ground benign)	$> 1$ Mio h
Isolation voltage (input/output 60 sec., rated)	1'500 VDC
Isolation capacitance (input/output, 100 KHz, 1 V)	1'500 pF max.
Isolation resistance (input/output, 500 VDC)	$> 1'000$ M Ohm

All specifications valid at nominal input voltage, full load and  $+25^{\circ}\text{C}$  after warm-up time unless otherwise stated.

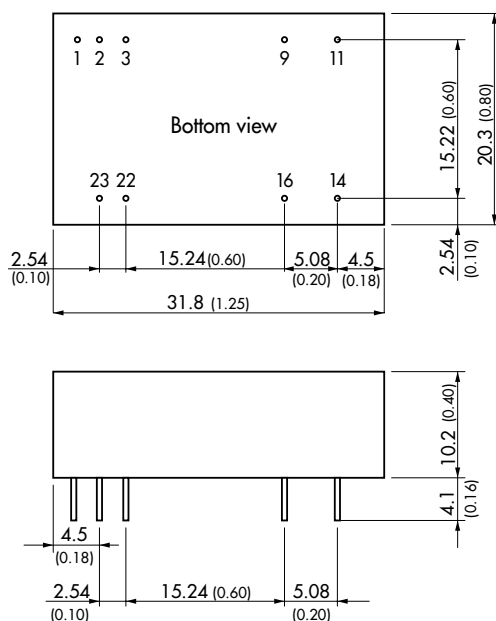
## General Specifications

Remote On/Off	<ul style="list-style-type: none"> <li>- On: 3.5 ... 12 VDC or open circuit</li> <li>- Off: 0 ... +1.2 VDC or short circuit pin 1 and pin 2</li> <li>- Off idle current: 10 mA max.</li> </ul>
Switching frequency	330 kHz typ.
Safety standards	UL/cUL 60950-1, IEC/EN 60950-1
	- Certification documents
Environmental compliance	<ul style="list-style-type: none"> <li>- Reach</li> <li>- RoHS</li> </ul>
	RoHS directive 2011/65/EU

## Physical Specifications

Casing	metal with non conductive baseplate
Pin	tinned copper
Weight	17.3 g (0.61 oz)
Soldering temperature (1.5mm from case for 10 sec.)	max. 260°C

## Outline Dimensions



Pin-Out		
Pin	Single	Dual
1	Remote On/Off	Remote On/Off
2	-Vin (GND)	-Vin (GND)
3	-Vin (GND)	-Vin (GND)
9	No pin	Common
11	No function	-Vout
14	+Vout	+Vout
16	-Vout	Common
22	+Vin (Vcc)	+Vin (Vcc)
23	+Vin (Vcc)	+Vin (Vcc)

Dimensions in [mm], ( ) = Inch  
 Pin diameter  $\varnothing 0.5 \pm 0.05$  ( $0.02 \pm 0.002$ )  
 Tolerances  $\pm 0.5$  ( $\pm 0.02$ )  
 Pin pitch tolerances  $\pm 0.25$  ( $\pm 0.01$ )